EUROFOODCHEM XVIII

OCTOBER 13-16, 2015

MADRID, SPAIN

UPCOMING CHALLENGES IN FOOD SCIENCE




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GAMMA IRRADIATION AT 2 KGY TO PRESERVE WILD EDIBLE MUSHROOMS: EFFECTS ON CHEMICAL PARAMETERS

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In spite of the immense popularity of mushrooms in the Northeast of Portugal, one of the European regions with higher wild edible mushrooms diversity, alternative technologies to increase mushrooms shelf-life are scarce. Treatment by irradiation emerges as a possible preservation technique, destroying microorganisms or insects that could be present in food and, sometimes, improving functional properties, with the least effects on sensory and nutritive quality (1). It has been successfully tested in several foods such as fruits, vegetables, meat, fish, aromatic and medicinal plants, being regulated by the European Union (EU) through the Directive (EC) No 1999/2/EC (2). In different countries (Croatia, Hungary, Poland, United Kingdom, Mexico) the recommended dose for extending the shelf life of fresh mushrooms is 1-3 kGy (3). Therefore, the aim of the present work was to validate the use of gamma irradiation at 2 kGy to maintain chemical parameters of wild mushrooms. The fruiting bodies of Boletus pinophilus Pilát & Dermek and Clitocybe subconnexa Murrill were collected in Trás-os-Montes (Northeast of Portugal) in November 2012 and 2013, respectively. The irradiation of these samples was carried out in experimental equipment with four 60Co sources. The estimated doses, dose rates and dose uniformity ratios (Dmax/Dmin) were: 2.09±0.16 kGy, 1.56 kGy/h, 1.18 for B. pinicola; and 1.95±0.22 kGy, 1.95 kGy/h, 1.33 and for C. subconnexa. The proximate composition was evaluated by official procedures, fatty acids were analyzed by gas-chromatography coupled to flame ionization detection (GC-FID), while sugars and tocopherols were determined by high performance liquid chromatography (HPLC) coupled to refraction index (RI) and fluorescence detectors, respectively. Some of the analyzed chemical parameters (especially sugars and fatty acids) showed significant changes after irradiation treatment, particularly in B. pinophillus, probably due to its higher water content. Nevertheless, the obtained differences did not seem to be sufficient to change the organoleptic characteristics of these mushrooms. The detected chemical changes might be considered as acceptable, when considering the high advantages of gamma irradiation at decontamination and/or disinfestation level.

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CERTIFICATE OF COMMUNICATION

I hereby certify that:

José Pinela; Ângela Fernandes; Amilcar L. Antonio; João C.M. Barreira; M. Beatriz P.P. Oliveira; Anabela Martins; Isabel C.F.R. Ferreira

have presented the POSTER entitled:

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Dr. Juana Frías
Chair

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